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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/590,895

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AIZAWA=1

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EXAMINER

POWERS, FIONA

ART UNIT

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1626

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/590,895	<b>Applicant(s)</b> AIZAWA ET AL.	
	<b>Examiner</b> Fiona T. Powers	<b>Art Unit</b> 1626	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10/13/09, 11/12/09 and 12/22/09.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/22/09</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

Claims 1 to 3 are pending in the application.

***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submissions filed on September 3, 2009 and October 13, 2009 have been entered.

***Information Disclosure Statement***

The information disclosure statement (IDS) submitted on December 22, 2009 has been considered. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

The references which are crossed out on form PTO 1449 for the information disclosure statement filed December 22, 2009 have not been considered because they fail to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of

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the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each reference listed that is not in the English language.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 to 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hohsaka et al. (US 2001/0044074) and Namba et al. (US 6071672) and Sun et al. (The Imaging Science Journal, 47(2), 113-117, 1999), of record.

**Determination of the scope and content of the prior art (MPEP §2141.01)**

The references disclose structurally similar cyanine dyes that are used for optical recording material. The cyanine dyes of Hohsaka et al. '074 are a salt of a trimethine cyanine dye cation and an azo cobalt complex azo anion and are structurally similar to the claimed cyanine dyes of the General Formula 1 in

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which  $Z^1$  and  $A^2$  are condensed heterocyclic aromatic rings which are naphthalene and  $R^1$  to  $R^6$  are independently aliphatic hydrocarbon groups such as methyl, ethyl and butyl. Note Chemical Formulas 16, 21, 34 and 67 on pages 6 to 13 of Hohsaka et al. '074.

Namba et al. and Sun et al. disclose trimethine cyanine dyes and monomethine cyanine dyes useful for optical recording material. The monomethine cyanine dyes of Namba et al. have a bisphenyldithiol metal complex anion. See the dye of the formula D-9-4 in column 19 of Namba et al. The monomethine cyanine dye D-1 of Sun et al. has a perchlorate anion. Note D-1 of Figure 1 and the "Results and Discussion" section in the left-hand column on page 114 of Sun et al.

*Ascertainment of the difference between the prior art and the claims (MPEP §2141.02)*

The cyanine dyes of Hohsaka et al. differ from the claimed cyanine dyes of the Formula 1 only in that they are trimethine cyanine dyes instead of monomethine cyanine dyes. The monomethine cyanine dyes of Sun et al. and Namba et al. differ from the claimed cyanine dyes of the Formula 1 in that the anion is perchlorate or bisphenyldithiol metal complex anion, respectively, instead of an azo metal complex anion. In addition, neither reference discloses the residual dye rate (%) as stated in instant claim 1.

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*Finding of prima facie obviousness---rational and motivation (MPEP §2142-2413)*

Namba et al. and Sun et al. disclose the interchangeability of monomethine cyanine dyes with trimethine cyanine dyes in optical recording medium. Note formula (2) in the abstract of Namba et al. where n is 0 or 1. Also note the dyes of the formulae D-5, D-6, D-7, D-8, D-9-1 to D-9-4 in columns 15 to 19 of Namba et al. '672.

Sun et al. disclose indocyanine dyes of different methine chain length useful for optical recording medium. Note the abstract and Figure 1 of Sun et al. The monomethine indocyanine dye D-1 was compared to the analogous trimethine (D-2), pentamethine (D-3) and heptamethine (D-4) indocyanine dyes in Table 1 on page 114. Sun et al. disclose "to meet the development of a short wavelength of the diode laser, new materials suitable for optical recording at a corresponding wavelength need to be found" (page 113). The results of Table 1 show that the monomethine dye had the shortest maximum absorption band. In the conclusion (p. 116), Sun et al. disclose that

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1. Both the molar extinction coefficient and the refractive index of D-1 are lower than those of other indolenine cyanine dyes.
2. As the central conjugated methine length increased, the decomposition temperature of the dyes decreased. D-1 shows the highest decomposition temperature.
3. D-1 film can exhibit relatively high reflection and low absorption at a wavelength of 480 nm. Therefore D-1 has been predicted to be the next-generation DVD-R medium.

One of ordinary skill in the art would have been motivated to make the claimed cyanine dyes of the Formula 1 by substituting a monomethine cyanine dye disclosed by Namba et al. or Sun et al. for the trimethine cyanine dye of Hoshaka et al. or by substituting the perchlorate or bisphenyldithiol metal complex anion disclosed by Sun and Namba with the azo metal complex anion of Hoshaka with the expectation that additional cyanine dyes useful for optical recording material would be obtained. The residual dye rate (%) of the instant claims would be an inherent property of the dyes obtained by combining the teachings of Hoshaka et al., Namba et al. and Sun et al. The claimed cyanine dyes would have been rendered obvious by the teachings of the references in the absence of any unobvious property.

The comparative data on pages 23 to 26 of the specification has been fully considered and deemed not persuasive of the patentability of the claimed cyanine dyes because the closest prior art dyes which are the cyanine dyes of Hohsaka et al. '074 mentioned above were not compared.

### ***Response to Arguments***

The rejection of claim 2 under 35 U.S.C. 112, second paragraph has been overcome by applicants' amendment filed September 3, 2009. Therefore this rejection has been withdrawn.

Applicant's arguments filed September 3, 2009 and October 13, 2009 have been fully considered but they are not persuasive.

In applicants' arguments filed September 3, 2009 they state that Namba teaches away from the combination of a counter ion of the formula (I) and a cyanine dye cation, other than that represented by Formula (II) of Namba as well as the combination of a counter ion other than that represented by Formula (I) and a cyanine dye cation of Formula (II) and also that each of the Namba, Hohsaka and Sun references teach cyanine dyes having specific cyanine cation with specific anion and there is no motivation to substitute the counter ion of Namba or Sun in the



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Hohsaka dyes since one would not expect that making a substitution of a counter ion would produce a useful dye.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Furthermore, it is well known in the art that counter ions can be interchanged depending on the use of the dye. Note for example, the definition of X<sup>-</sup> in paragraph {0020} of Hohsaka et

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al. (US 2001/0044074) reproduced below.

[0020]  $X^-$  in Formula 1 represents a suitable counter ion. Depending on uses, such a counter ion is not limited and appropriately selected on the basis of its solubility in DAA and/or heat resistance. When used in optical recording media, the counter ion which does not substantially change the quality of reflection layers including metals, and more particularly, anions comprising two or more kinds of elements are desirable. Examples of such anions are inorganic acid ions such as phosphoric acid ion, perchloric acid ion, periodic acid ion, hexafluoro phosphoric acid ion, hexafluoro antimononic acid ion, hexafluoro stannic acid ion, fluoroboric acid ion, and tetrafluoroboric acid ion; organic acid ions such as thiocyanic acid ion, benzenesulfonic acid ion, naphthalenesulfonic acid ion, p-toluenesulfonic acid ion, alkylsulfonic acid ion, benzencarbonic acid ion, alkylcarbonic acid ion, trihaloalkylcarbonic acid ion, alkylsulfonic acid ion, trihaloalkylsulfonic acid ion, and nicotinic acid ion; and organic metal complex anions such as azo, bisphenyldithiol, thiocatechol chelate, thiobisphenolate chelate, and bisdiol- $\alpha$ -diketone. Judging from stability such as explosiveness and ease of handling, anions, which comprise fluorine and metal elements selected from those of the 15 group in the periodic law table such as phosphorus, antimony and bismuth, are desirable; hexafluoro phosphoric acid ion and hexafluoro antimononic acid ion. The cyanine dyes of the present invention bearing these anions as a counter ion are characteristic in that they have relatively-high heat resistance, easy handlability, and solubility in organic solvents such as DAA.

Also note the definition of  $X^-$  in column 3, line 56 to column 4, line 9 of Kasada et al. (US 6525181), of record reproduced below.

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In Formula 1,  $X^-$  represents a counter ion. Although the counter ion is not specifically restricted and varied depending on use, it can be appropriately selected in view of the solubility of the cyanine dyes in each organic solvent used and the stability of the dyes in a glass state. Examples of such are fluoric acid, chloric acid, bromic acid, iodic acid, phosphoric acid, perchloric acid, periodic acid, phosphoric acid hexafluoride, antimony acid hexafluoride, tin acid hexafluoride, fluoroboric acid, and tetrafluoroborate ions; organic acid anions such as thiocyanic acid, benzenesulfonic acid, naphthalenesulfonic acid, p-toluenesulfonic acid, ben-

zenecarboxylic acid, alkylcarboxylic acid, trihaloalkylsulfonic acid, alkylsulfonic acid, trihaloalkylsulfonic acid, and nicotinic acid ions; and metal complex anions such as those of azo, bisphenyldithiol, thiocatecholchelate, thiobisphenolatechelate, bisdiol- $\alpha$ -diketone, and their related compounds. In the cyanine dyes represented by Formula 1, structurally different cis trans isomers thereof, if exist, are all included in the present invention.

In addition, at page 12 of the remarks filed September 3, 2009, applicants argue that Examples 1 and 2 at pages 19 to 23 of the present specification demonstrate that the claimed cyanine dye possesses unexpected excellent properties.

However, Examples 1 and 2 at pages 19 to 21 of the specification has been fully considered and deemed not persuasive of the patentability of the claimed cyanine dyes because it is known in the art that cyanine dye compounds comprising a cyanine cation with azo metal complex anion have a

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higher decomposition point than some cyanine dyes composed of the same cyanine cation with a certain non-azo metal complex anion. For example, as demonstrated by Chemical Formula 23 and 25 of Table 1 in column 22 of Kasada et al. (US 6525181) the cyanine dye with the metal complex azo anion (Chemical Formula 25) had a decomposition point of 312.8°C as compared to the cyanine dye with the  $\text{ClO}_4^-$  anion (Chemical Formula 23) which had a decomposition point of 308.0°C. Expected beneficial results are evidence of obviousness not unobviousness.

In the remarks filed October 13, 2009, applicants again state that Namba teaches away from the combination of a counter ion of the formula (I) and a cyanine dye cation, other than that represented by Formula (II) of Namba as well as the combination of a counter ion other than that represented by Formula (I) and a cyanine dye cation of Formula (II).

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

At page 10 of the remarks filed October 13 2009, applicants state that the claims have been amended to include the residual dye rate and its definition which sets forth additional subject matter which is not shown or made obvious by the prior art.

However, the residual dye rate (%) of the instant claims would be an inherent property of the dyes obtained by combining the teachings of Hosaka et al., Namba et al. and Sun et al. The claimed cyanine dyes would have been rendered obvious by the teachings of the references in the absence of any unobvious property.

The references made of record and not relied upon show the state of the art.

### ***Conclusion***

All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114.

Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first

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action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fiona T. Powers whose telephone number is 571-272-0702. The examiner can normally be reached on Monday - Friday 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph K. McKane can be reached on 571-272-0699. The fax phone number for the

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organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Fiona T. Powers/  
Primary Examiner, Art Unit  
1626

ftp  
January 19, 2010